

In the Claims:

Please cancel claims 17, 28, and 29 without prejudice, amend claims 16, 18, and 25 and add new claims 30 to 35 as follows:

Claims 1 to 15 (canceled).

16.(currently amended) A method of determining suitability of [[an]] a crystalline optical material for production of an optical element, particularly for high-energy irradiation, wherein radiation-induced absorption is detected or identified in the optical material, said method comprising the steps of:

a) pre-irradiating the crystalline optical material with laser radiation until rapid damage induced in the crystalline optical material with the laser radiation is saturated;

b) after the pre-irradiating of step a), measuring total fluorescence produced in the crystalline optical material by excitation radiation during and/or immediately after irradiating the crystalline optical material with the excitation radiation, said total fluorescence being composed of intrinsic fluorescence and non-intrinsic fluorescence;-and

c) determining the non-intrinsic fluorescence of the crystalline optical material in the total fluorescence measured during and/or immediately after irradiating with the excitation radiation~~[[.]]~~;

d) determining the intrinsic fluorescence of the crystalline optical material, said intrinsic fluorescence being a constant of said crystalline optical material;

e) determining an amount ratio of said non-intrinsic fluorescence to said intrinsic fluorescence in said total fluorescence measured in step b); and

f) ascertaining whether or not said optical material is suitable for making said optical element according to said amount ratio determined in step e).

Claim 17.(canceled)

18.(currently amended) The method as defined in claim 16, wherein the crystalline optical material is irradiated by the excitation radiation for a short period of time.

19.(previously presented) The method as defined in claim 16, wherein the excitation radiation comprises at least one laser pulse.

20.(previously presented) The method as defined in claim 16, wherein the total fluorescence is measured with an I-CCD camera.

21.(previously presented) The method as defined in claim 16, wherein the total fluorescence is measured using a grating spectrograph.

22.(previously presented) The method as defined in claim 16, wherein the excitation radiation has an excitation radiation wavelength and during the measuring of the total fluorescence of the optical material by a measuring device

radiation emitted from the optical material at the excitation radiation wavelength is prevented from reaching the measuring device by a barrier device.

23.(previously presented) The method as defined in claim 22, wherein the barrier device is a radiation filter and/or a spectral grating.

24.(previously presented) The method as defined in claim 16, wherein the total fluorescence is measured after halting the irradiating of the optical material with the excitation radiation during a time interval in which the non-intrinsic fluorescence decays.

25.(currently amended) The method as defined in claim 16, wherein the crystalline optical material is CaF_2 , BaF_2 , SrF_2 , LiF , NaF , MgF_2 or KMgF_3 .

26.(previously presented) The method as defined in claim 16, wherein the intrinsic fluorescence comprises intrinsic fluorescence bands, the non-intrinsic fluorescence comprises non-intrinsic fluorescence bands and one of said intrinsic fluorescence bands is used to standardize the non-intrinsic fluorescence bands.

27.(previously presented) The method as defined in claim 16, wherein radiation energy densities of the excitation radiation are comparable to those of the radiation-induced absorption.

Claims 28 to 29.(canceled)

30.(new) The method as defined in claim 16, further comprising measuring the total fluorescence with a measuring device and wherein said measuring device comprises a source for propagating the excitation radiation along a predetermined light path; a holder for a material sample to be measured arranged in the predetermined light path; means for measuring fluorescence intensities of light emitted from the material sample when the material sample is held in the holder, said means for measuring fluorescence intensities being arranged off the predetermined light path, and a barrier device located between the holder and the means for measuring fluorescence intensities, said barrier device comprising means for preventing radiation from the material sample having a wavelength that is the same as that of the excitation radiation from reaching the means for measuring fluorescence intensities.

31.(new) The method as defined in claim 30, wherein said source for propagating said excitation radiation is a pulsed laser, the means for measuring fluorescence intensities is a grating spectrograph equipped with a CCD camera, and the barrier device is a dielectric thin-layer filter.

32.(new) A method of determining suitability of an alkaline or alkaline earth fluoride monocrystal for making an optical element for high-energy irradiation,

wherein radiation-induced absorption is detected or identified in the monocrystal, said method comprising the steps of:

a) pre-irradiating the alkaline or alkaline earth fluoride monocrystal with laser radiation until rapid damage induced in the alkaline or alkaline earth fluoride monocrystal with the laser radiation is saturated;

b) after the pre-irradiating of step a), measuring total fluorescence produced in the alkaline or alkaline earth fluoride monocrystal by excitation radiation at an excitation radiation wavelength below 200 nm by means of a fluorescence measuring device during and/or immediately after irradiating the alkaline or alkaline earth fluoride monocrystal with the excitation radiation, said total fluorescence being composed of intrinsic fluorescence and non-intrinsic fluorescence;

c) during the measuring of the total fluorescence, preventing ultraviolet radiation at the excitation radiation wavelength propagated toward the fluorescence measuring device from reaching the measuring device by means of a barrier device;

d) determining the non-intrinsic fluorescence of the alkaline or alkaline earth fluoride monocrystal in the total fluorescence measured during and/or immediately after irradiating with the excitation radiation;

e) determining the intrinsic fluorescence of the alkaline or alkaline earth fluoride monocrystal, said intrinsic fluorescence being a constant of said alkaline or alkaline earth fluoride monocrystal;

f) determining an amount ratio of said non-intrinsic fluorescence to said intrinsic fluorescence in said total fluorescence measured in step b); and

g) ascertaining whether or not said alkaline or alkaline earth fluoride monocrystal is suitable for making said optical element according to said amount ratio determined in step e).

33.(new) The method as defined in claim 32, wherein said barrier device is a wavelength-specific dielectric thin-layer filter.

34.(new) The method as defined in claim 16, wherein said optical element is a lens, a prism, a light-conducting rod or an optical window for DUV photolithography, for steppers, for excimer lasers, for wafers, for computer chips, for integrated circuits, and for electronic devices that contain said integrated circuits and said computer chips.

35.(new) The method as defined in claim 32, wherein said optical element is a lens, a prism, a light-conducting rod or an optical window for DUV photolithography, for steppers, for excimer lasers, for wafers, for computer chips, for integrated circuits, and for electronic devices that contain said integrated circuits and said computer chips.